University of Gdańsk

Subject card

Subject name and code	Decarbonization of Transport , PG_00200423						
Field of study	Logistics and Mobility						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		English		
Semester of study	6		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Ernest Czermański, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	15.0	0.0	45
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	45		0.0		5.0	50
Subject objectives	The aim of the course is to familiarize students with the key challenges and strategies for reducing greenhouse gas emissions in the transport sector, with particular emphasis on public policies, low-emission technologies and sustainable mobility models.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[LML3_U04] is able to predict the course of logistics and mobility processes and systems	Is able to predict the impact of implementing decarbonisation strategies on the functioning of transport and mobility systems in the context of their efficiency, sustainability and development.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[LML3_U14] can appropriately set priorities and plan and organize the tasks involved in their implementation, as well as monitor and evaluate progress	Is able to plan and organise actions to decarbonise transport, defining their priorities and monitoring progress in achieving environmental goals.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[LML3_K06] is ready to be guided in his professional life by business ethics and corporate social responsibility, respect for others and be loyal to his employer	Is able to identify ethical and social aspects of actions aimed at decarbonising transport and take into account the principles of social responsibility in making logistics and mobility decisions.	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[LML3_W05] has a knowledge of a human being as an entity that creates social structures and the principles of their functioning	Is able to analyse the impact of social attitudes and individual behaviours on shaping transport decarbonisation policies and the development of sustainable mobility systems.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[LML3_W03] has advanced knowledge of the relationship between business entities and public institutions operating in the national, international and intercultural sphere, understands the importance of logistics and mobility for their functioning	Is able to analyse the cooperation of economic entities and public institutions in transport decarbonisation processes, taking into account national, international and intercultural conditions.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

Subject contents

1. Introduction to transport emissions
2. Climate policies and regulations in transport
3. Low- and zero-emission technologies in road transport
4. Decarbonisation of rail, maritime and air transport
5. The role of renewable energy in transport systems
6. Sustainable urban mobility and transport planning
7. Low-emission logistics and supply chain management
8. Economic and social aspects of transport decarbonisation
9. Public-private partnerships and financing the transformation
10. Case studies and scenarios for transport transformation

The course consists of both scheduled classes and independent student work outside class. During their independent work, students complete projects under the guidance of, and in regular consultation with, the course instructor.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
project	51.0%	40.0%
test	51.0%	60.0%

Recommended reading

Basic literature	Burak Zincir, Pravesh Chandra Shukla, Avinash Kumar Agarwal, Decarbonization of Maritime Transport, Springer, 2023. Noussan Michel, The Future of Transport Between Digitalization and Decarbonization, Lightning Source Inc, 2020.
Supplementary literature	Avinash Kumar Agarwal, Greener and Scalable E-fuels for Decarbonization of Transport, Springer Verlag, 2013.
eResources addresses	

Example issues/ example questions/ tasks being completed

Which of the following actions contributes most to decarbonizing the urban transport system?

A. Expanding the urban motorway network
B. Increasing the number of parking spaces in the city center
C. Introducing electric vehicle fleets in public transport
D. Reducing the price of fossil fuels for individual drivers

Work placement

Not applicable